

# Claims

- [c1] A method of creating a photomask layout for projecting an image of an integrated circuit design comprising:  
creating a layout of spaced integrated circuit shapes to be projected via the photomask;  
determining bisectors between adjacent ones of the spaced integrated circuit shapes; and  
creating sub-resolution assist features along at least some of the bisectors between the adjacent ones of the spaced integrated circuit shapes.
- [c2] The method of claim 1 wherein bisectors are determined by creating Voronoi cells around the spaced integrated circuit shapes.
- [c3] The method of claim 1 wherein the adjacent ones of the spaced integrated circuit shapes are parallel to each other and the sub-resolution assist features along the bisectors are parallel to the spaced integrated circuit shapes.
- [c4] The method of claim 1 further including identifying different types of vertices for the bisectors prior to creating the sub-resolution assist features, and prioritizing cre-

ation of the sub-resolution assist features in accordance with the type of vertex.

- [c5] The method of claim 1 further including extending at least some of the sub-resolution assist features beyond the bisectors on which they are created.
- [c6] The method of claim 1 further including extending at least some of the sub-resolution assist features beyond the bisectors on which they are created to connect to other sub-resolution assist features.
- [c7] The method of claim 1 further including removing at least one of the sub-resolution assist features along the bisectors prior to finalizing the photomask layout.
- [c8] The method of claim 1 wherein the integrated circuit shapes are two-dimensional and include shapes having edges parallel and perpendicular to each other, between which the bisectors are located.
- [c9] The method of claim 1 wherein the integrated circuit shapes are two-dimensional and include shapes having lengths of parallel edges in which an edge of one shape ends at a point within the length of the other shape, between which the bisectors are located.
- [c10] A program storage device readable by a machine, tangi-

bly embodying a program of instructions executable by the machine to perform method steps for creating a photomask layout for projecting an image of an integrated circuit design, said method steps comprising: creating a layout of spaced integrated circuit shapes to be projected via the photomask; determining bisectors between adjacent ones of the spaced integrated circuit shapes; and creating sub-resolution assist features along at least some of the bisectors between the adjacent ones of the spaced integrated circuit shapes.

- [c11] The program storage device of claim 10 wherein, in the method, bisectors are determined by creating Voronoi cells around the spaced integrated circuit shapes.
- [c12] The program storage device of claim 10 wherein, in the method, the adjacent ones of the spaced integrated circuit shapes are parallel to each other and the sub-resolution assist features along the bisectors are parallel to the spaced integrated circuit shapes.
- [c13] The program storage device of claim 10 further including, in the method, identifying different types of vertices for the bisectors prior to creating the sub-resolution assist features, and prioritizing creation of the sub-resolution assist features in accordance with the type of

vertex.

- [c14] The program storage device of claim 10 further including, in the method, extending at least some of the sub-resolution assist features beyond the bisectors on which they are created.
- [c15] The program storage device of claim 10 further including, in the method, extending at least some of the sub-resolution assist features beyond the bisectors on which they are created to connect to other sub-resolution assist features.
- [c16] An article of manufacture comprising a computer-usable medium having computer readable program code means embodied therein for creating a photomask layout for projecting an image of an integrated circuit design, the computer readable program code means in said article of manufacture comprising:
  - computer readable program code means for creating a layout of spaced integrated circuit shapes to be projected via the photomask;
  - computer readable program code means for determining bisectors between adjacent ones of the spaced integrated circuit shapes; and
  - computer readable program code means for creating sub-resolution assist features along at least some of the

bisectors between the adjacent ones of the spaced integrated circuit shapes.

[c17] The article of manufacture of claim 16 wherein bisectors are determined by creating Voronoi cells around the spaced integrated circuit shapes.

[c18] The article of manufacture of claim 16 wherein the adjacent ones of the spaced integrated circuit shapes are parallel to each other and the sub-resolution assist features along the bisectors are parallel to the spaced integrated circuit shapes.

[c19] The article of manufacture of claim 16 wherein the computer readable program code means in said article of manufacture further includes computer readable program code means for identifying different types of vertices for the bisectors prior to creating the sub-resolution assist features, and prioritizing creation of the sub-resolution assist features in accordance with the type of vertex.

[c20] The article of manufacture of claim 16 wherein the computer readable program code means in said article of manufacture further includes computer readable program code means for extending at least some of the sub-resolution assist features beyond the bisectors on

which they are created.